Remarks

Claims 1-8 are pending in this application. No claims are amended herein.

Indefiniteness rejection from the non-final Office action dated April 15, 2008

Claims 1-8 were rejected in the non-final Office action dated April 15, 2008, as allegedly indefinite due to the use of the phrase "control plant" in claims 1 and 6. In the amendment and response filed July 2, 2008, Applicants amended claims 1 and 6 (from which claims 2-5 and 7-8 depend, respectively) to recite "a non-transgenic control plant..." and requested that the indefiniteness rejection be withdrawn. The instant final Office action (dated October 8, 2008) acknowledges that claims 1 and 6 were amended, but does not explicitly indicate whether this rejection under §112, 2nd paragraph has been withdrawn. Applicants renew their previous arguments, and respectfully repeat their request for acknowledgement that the indefiniteness rejection has been overcome.

Claim Rejection – 35 U.S.C. § 103

In the instant office action, claims 1-8 are rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Li *et al.* (US 2002/0078475) taken with Harper *et al.* (US 2002/0160378). Applicants traverse this rejection and renew arguments made in the response to non-final Office action filed July 2, 2008. Further in support of these arguments, Applicants submit herewith a Declaration under 37 C.F.R. § 1.132.

As noted previously, Li *et al.* teach methods for optimizing oil production in a plant by increasing or decreasing the level of an acyl-CoA thioesterase in peroxisomes. Li *et al.* further teach methods for optimizing oil production in a plant by **decreasing** the level or activity of a protein which directly or indirectly affects β-oxidation (paragraph [0008]). The methods are further described as "decreasing β-oxidation by modulating acyl-CoA thioesterase expression...and additionally **decreasing** the level or activity of at least one additional protein..." (paragraph [0024], emphasis added). Citrate synthase is listed as one of the other proteins that may be **decreased** in order to affect β-oxidation and thereby increase plant oil production (paragraph [0025]).

Li *et al.* clearly **teach away** from Applicants' invention, increasing the level or activity of citrate synthase in order to increase oil production by a plant. Based on Li *et al.*, one of skill in the art would expect that **decreasing** the level of citrate synthase would lead to **increased** oil production by a plant. Li *et al.* would not lead one of skill in the art to expect that **increasing** the level of citrate synthase would lead to **increased** oil content. Therefore, one of skill in the art would not be motivated to combine the method of Li *et al.* with the sequence described in Harper *et al.* to **over-express** citrate synthase in order to produce a plant with a high oil phenotype, as claimed, nor would there have been a reasonable expectation that such would work based on the teachings in the cited references.

In section 9 of the final Office action, the Office rebuts Applicants' above argument by stating "...the examples [of the specification] do not demonstrate an increase in citrate synthase expression, and therefore it is unclear that the increase in oil production is due to an increase in expression of the gene. It appears that the results could be due to cosuppression of the gene, as opposed to overexpression of the gene." Based on this, the Office alleges that Applicants' argument of non-obviousness is not commensurate with the scope of the claims.

In rebuttal, Applicants submit herewith a Declaration under 37 C.F.R. § 1.132 of Dr. John Davies ("the Declaration"); the Declaration is supported by **Exhibits A-C**. This Declaration presents post-filing data demonstrating that transformation of *Arabidopsis* plants with the citrate synthase expression vectors described in Example 1 of the specification (pages 17-18 of the specification as filed) results in an increase in citrate synthase transcription in the resultant plants. The Declaration further shows that the increase in citrate synthase transcription correlates with an increase in seed oil production in the *Arabidopsis* plants. In view of the Declaration, Applicants assert that their evidence of non-obviousness (that the Liu *et al.* reference teaches away from making the instant invention) is commensurate with the scope of the claims and deserves consideration.

Transformation of *Arabidopsis* plants for the experiments described in the Declaration was performed as described in Example 1 of the Specification (see paragraph 2 of the Declaration and pages 17-18 of the specification). The *Arabidopsis* gene At3g58750 (SEQ ID

NO: 1), encoding citrate synthase, was cloned behind the strong constitutive CsVMV promoter in a binary expression vector and transformed into *Arabidopsis* using Agrobacterium-mediated transformation. T1 seed harvested from the primary transformant was spread on medium containing a selective agent and transformed T1 seedlings identified. The transgenic seedlings were grown to maturity and T2 seed harvested. Seed from each T1 plant is considered to contain a separate transgenic event and designated as a sample family (*e.g.*, sample family XZ00850001). Oil content from transgenic plant seeds was compared with control seeds and the expression levels of the Atg58750 transgene were measured.

Four of the ten samples tested (sample families ZX00850001, ZX00850002, ZX00850004 and ZX00850011) showed an increase in seed oil content (t-test P value < 0.05; paragraph 2 of the Declaration, and **Exhibit B**). Further, transcripts for the At3g58750 were more abundant in five of the six samples tested (ZX00850001, ZX00850002, ZX00850004, ZX00850007 and ZX00850008) compared with wild-type control plants (paragraph 3 of the Declaration, and **Exhibit C**). The one sample that did not show an increase in At3g58750 transcript exhibited no change in expression of this gene transcript. None of the six sample families tested exhibited any suppression of At3g58750 transcript levels. Further, sample families ZX00850001, ZX00850002 and ZX00850004 exhibit both increased citrate synthase transcript production relative to wild-type controls (paragraph 3 of the Declaration and **Exhibit C**; sample ZX00850011 was not tested) as well as increased seed oil content (paragraph 2 of the Declaration and **Exhibit B**). Thus, because cosuppression inherently involves suppression of both the native- and trans-genes, and the trans-gene is not suppressed in this case, cosuppression cannot explain the increase in seed oil content observed in **Exhibit B**. In support of this finding, the Declaration shows that increased At3g58750 transcript expression in transgenic plants correlates with an ***increase*** in seed oil content, not a ***decrease*** as suggested by Liu *et al.*

Applicants respectfully submit that cosuppression cannot explain the observed increase in seed oil content in Applicants' work. The disclosure of Liu *et al.*, which suggests that a decrease in citrate synthase expression will increase seed oil content, at best teaches away from making the instant invention. Based on the foregoing, Applicants request that the rejection under 35 U.S.C. § 103(a) be withdrawn.

Conclusion

Applicants respectfully submit that the claims are now in condition for allowance. If any issues remain, the Examiner is requested to contact the undersigned to arrange a telephonic interview prior to the preparation of any further written action.

Respectfully submitted,

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